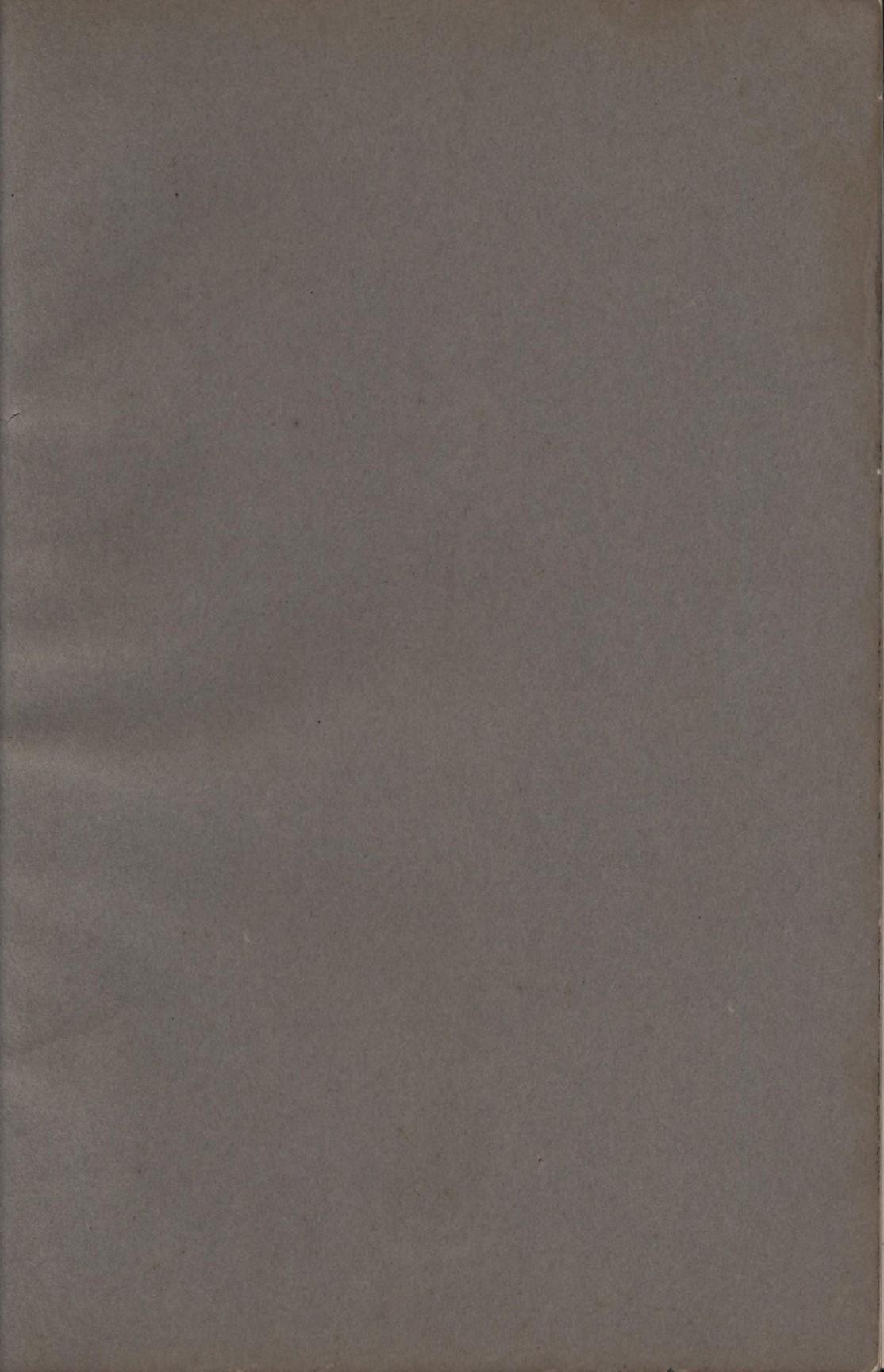




DUFF JACKS



Catalogue No. 106



D U F F J A C K S

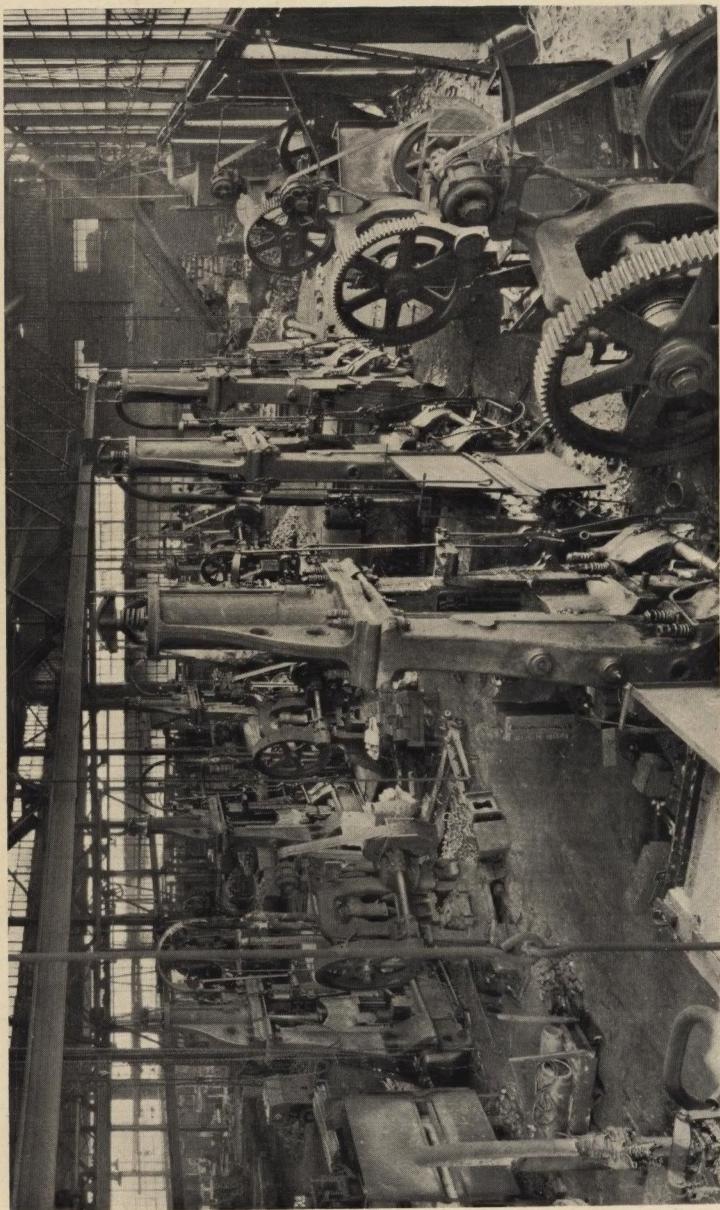
CATALOGUE No. 106

*See Index
In Back of Book*

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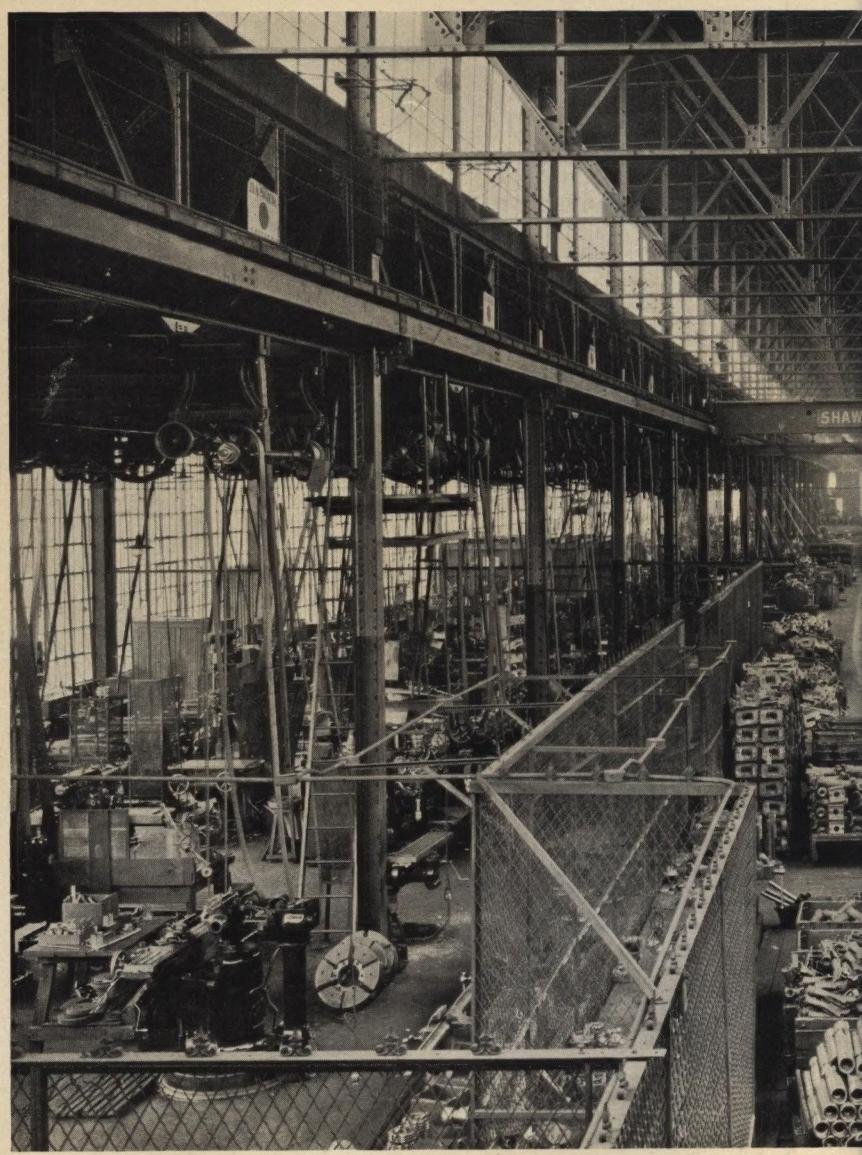
The
Duff Manufacturing Co.
Established 1883
Pittsburgh, Pa., U.S.A.

Partial View of Duff Drop Forge Shop





Corner of Duff Heat Treating Department



Interior of Duff Main Works—World's Largest Plant

THE DUFF MANUFACTURING CO.

Established 1872

BRANCH OFFICES { 50 Church Street
NEW YORK, N.Y.

Peoples Gas Building
CHICAGO, ILL.

Candler Building
ATLANTA, GA.

EXPORT OFFICE: 50



oted exclusively to the Manufacture of Lifting Jacks

MPANY · Pittsburgh, Pennsylvania

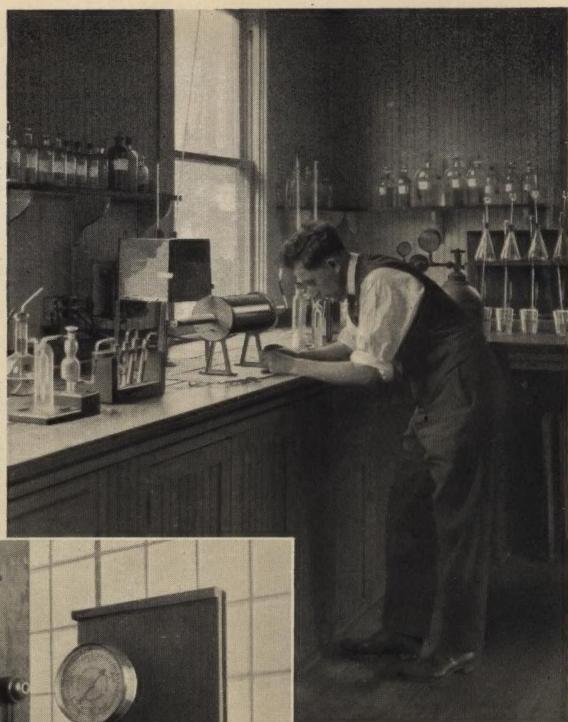
1883

Railway Exchange Building
ST. LOUIS, MO.

h Street, New York City

Southern Pacific Building
HOUSTON, TEXAS

Monadnock Building
SAN FRANCISCO, CAL



*Above: Analyzing jack materials in Duff Chemical Laboratory
Below: Testing hardness of Duff jack parts after heat treatment*

Uniform Excellence Assured by Duff Manufacturing Facilities

NO expense or effort is spared to make Duff Jacks the very best it is possible to produce. The following carefully managed departments each has its share and responsibility in making for you the finest jacks money can buy.

The Engineering Department with its forty years' experience in the design of jacks, carefully studies and tests each model, and is constantly improving them or developing new ones to take care of the latest strides in railroad practice. Each part in each jack is definitely and closely specified as to the material of which it is made. Thus, each journal jack is made of (1) five grades of steel, each selected for its fitness for the part concerned (2) a special composition bronze and (3) best quality malleable iron.

The Laboratory tests all raw material as soon as received to insure that it meets the rigid specifications set by the Engineering Department.

The Forge Shop with its powerful hammers, produces drop forged jack parts of greatest strength and density.

The Machine Shop modern in every detail, turns out finished material accurately cut, insuring close fit and true alignment of parts.

The Heat Treating Department provided with the latest scientific methods of control and run by experts, produces working parts as hard and strong as the art can make them.

The Inspection Department acts as a further assurance of the flawlessness and accuracy of the finished parts.

The Testing Department makes a final test under *moving load* of the assembled jack to check its rated capacity.

This complete chain of manufacturing links, from design to finished product, leaves no loop-hole for inferior jacks to slip through, and assures you of getting a thoroughly reliable tool, whenever and wherever purchased. You are certain of DUFF UNIFORM EXCELLENCE.

MANUFACTURED EXCLUSIVELY BY

The Duff Manufacturing Company

Established 1883

PITTSBURGH, PENNA., U.S.A.

DUFF JACKS



DUFF JACKS



SECTION I

Screw Jacks

Capacities from
10 to 75 Tons

TYPES

- High Speed*—ball bearing—for locomotives and heavy cars
- Journal Box*—ball bearing—for steam and electric railway cars and locomotives
- Pushing and Pulling*—for straightening center sills and sides of freight cars
- Horizontal*—ball bearing—for horizontal operation, as spreading cars for twin loading
- Standard Speed*—ball bearing—for general lifting purposes
- Telescope Screw*—non-ball bearing—for general lifting purposes

DUFF JACKS



Duff High Speed Ball Bearing Screw Jacks

75 Tons Capacity

*Inverted Design
Gives Maximum
Operating Clearance*

As the ratchet case is located in the base, and does not move up with the load, the maximum clearance for operation of lever is obtained at the first stroke and maintained unchanged while raising. This eliminates a drawback common to all screw jacks having the ratchet case located in the head of the jack. As a consequence, these jacks can be operated in many cramped places, where there is insufficient headroom for operating other screw jacks.

*Key Prevents Slipping
or Turning of Jack
While Raising*

Another important exclusive feature of these jacks, is the key between the shell and standard, designed to absolutely prevent the turning of the standard while being raised. This is of the greatest practical value in operating jacks on greasy floors, icy ground, under freshly painted car sills, and elsewhere, especially in an inclined position. In practice it has been proven that these jacks eliminate all chance of the load shifting or the jack slipping, thereby not only saving a great amount of time formerly wasted in successive attempts to ratchet up the jack in several positions before succeeding in obtaining a firm hold, but also eliminating danger of accidents to men and equipment.

*Small Head Reduces
Eccentric Stresses*

It is apparent, when a jack with a large head is applied in an inclined position or with the load resting near the edge of the head, that the eccentric strain on the jack becomes very great, not infrequently causing jack to stick or parts to break. The inverted design permits making a head of minimum size, which has the twofold advantage of being easily applied in cramped space and of preventing loads from being applied so far from axis of standard as to cause excessive eccentric stresses.

*Can Be Used
as a Press*

These inverted jacks can be operated to good advantage in the pit, and are frequently used as a substitute for a press, for pressing in driving rod brasses; also for lining up a locomotive when driving wheels have been removed for repairs, and for placing locomotives back on the track.

Easy to Operate

These jacks are not only extremely rapid for their capacity, on account of their steep pitch double-thread screw, but are very easy to operate because of the reduction of friction. The screw is made of special alloy steel, heat-treated, and turns in a bronze nut of special composition. This contact of bronze with hard steel materially reduces friction. The accurate machine-finishing of moving parts serves the same purpose, and also eliminates lost motion.

Lowering Always Under Control

Lowering is effected by rotation of the crank handle in the photograph. The load is thus always under control and the jack can be lowered as rapidly or as slowly as desired. In spite of how fast the load may be lowered, it can be stopped instantly and with absolute safety, within one-thousandth of an inch of any point desired. If desired to lower the jack unloaded, the button on top of bonnet is pressed down while

DUFF JACKS



cranking. The crank may also be used for quickly raising the jack up to the load. A new feature is that the crank, if desired, can be furnished permanently attached, thus preventing possibility of handle becoming lost. When not in use, this new type of handle folds back out of the way of operator.

Minimum "Sink-Back" of Jack After Each Stroke The jack is provided with a triple-pawl HOLDING CLUTCH engaging the ratchet wheel. This clutch virtually divides the pitch of the ratchet wheel by three, making it possible to operate the jack with very short strokes of lever and with the minimum "sink-back" of the head at each stroke, which results in greatly facilitating the quick and easy operation under heavy loads, conserving the strength of the men for actual lifting work.

Moves on Its Own Wheels By inserting the lifting lever in the socket provided for this purpose, the jack can be tipped over and moved into position on its own sturdy wheels, mounted in the base. (See illustration on following page.) No time lost in waiting for a truck to be brought around.



Duff 75-Ton High Speed Jack supporting rear end of an N. I. S. type locomotive, weighing 215 tons, so that both rear wheels are off the rails. Estimated load raised by jack: 95 tons

DUFF JACKS



Permanently Attached Handle

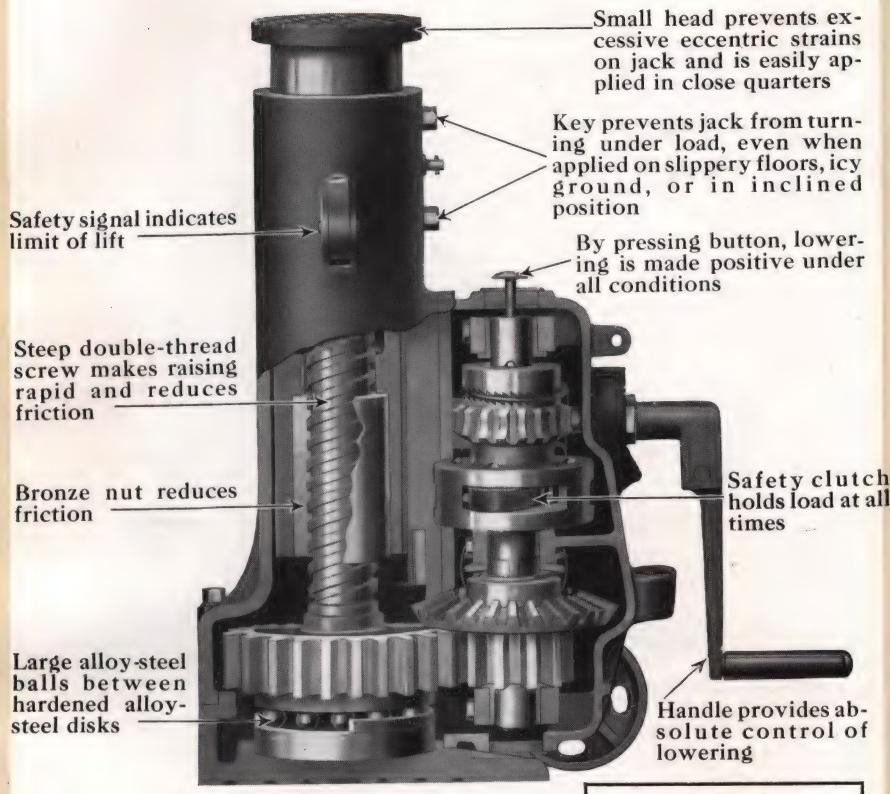
This handle is permanently attached so that it cannot be lost or mislaid. When not in use it folds back, out of the way.



Wheels of Its Own

A 75-ton jack easily moved about on its own wheels by one man. No loss of time waiting for truck to be brought around. The ratchet case being stationary and near the ground, the greatest possible clearance for operation of lever is maintained while raising.

DUFF JACKS



Lubrication Assures Long Life Before leaving the factory each jack is packed with grease to lubricate gears, ball bearings, and nut. The mechanism being in the base, grease does not tend to flow away from it as in the case of other types of screw jacks. Provision is made for oiling every part not covered with grease.

Always Safe Safety is assured by a clutch which holds the load at all times, preventing any possibility of the jack sinking or dropping the load. A safety signal indicates when the jack has reached its maximum height. The jack cannot tip over under load on account of the concentration of weight at the bottom. The base is large enough to rest on two ties.

Conservative Rating Actual tests under the severest operating conditions have proved that the rating of 75 tons is conservative. The illustration on page 11 shows one of these jacks supporting the rear end of an N-I-S type locomotive, weighing 215 tons, so that the rear wheels are off the rails. It is estimated that the load on the jack was at least 95 tons.

DUFF JACKS

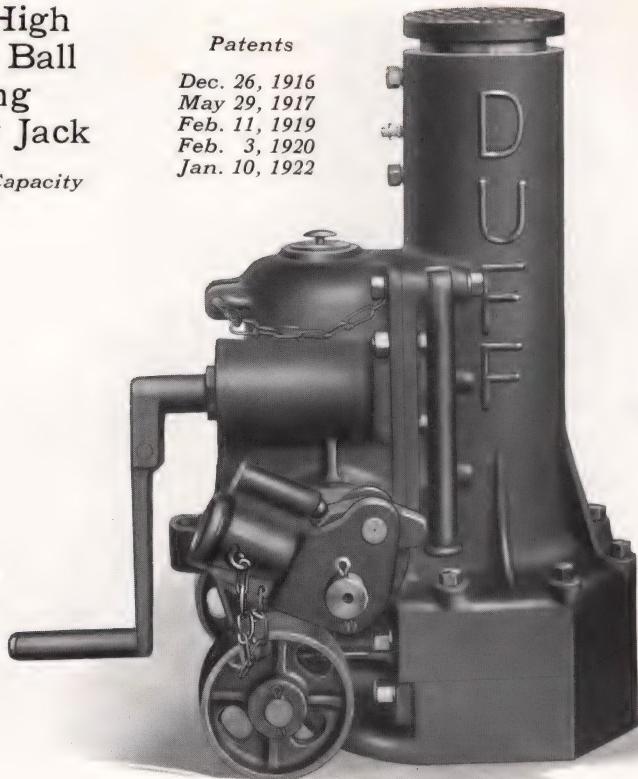


Duff High Speed Ball Bearing Screw Jack

*75 Tons Capacity
Model A*

Patents

Dec. 26, 1916
May 29, 1917
Feb. 11, 1919
Feb. 3, 1920
Jan. 10, 1922



Easy Spotting With Large Carrying Handle

Spotting is easy, as the Carrying Handles are 12 inches long. When they are raised into position, the total measurement from end to end is about 30 inches, giving the operator ample leverage. The jacks can be readily carried over a rough surface or for a long distance by using a piece of pipe on each carrying handle, thus giving the operators plenty of leg room. The jacks maintain an upright position as the handles are placed above the center of gravity.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Diameter Head Inches	Size of Base Inches	Weight Pounds	Code Word	List Price
7520-A	75	20	6	6 $\frac{1}{8}$	10 $\frac{3}{4}$ x 12 $\frac{1}{2}$	410	Honey	\$300.00
7524-A	75	24	10	6 $\frac{1}{8}$	10 $\frac{3}{4}$ x 12 $\frac{1}{2}$	425	Hunch	300.00
7526-A	75	26	12	6 $\frac{1}{8}$	10 $\frac{3}{4}$ x 12 $\frac{1}{2}$	440	Hulk	300.00

DUFF



JACKS

50-Ton High Speed Ball Bearing Screw Jacks

Design These 50-ton jacks are identical in design and construction with the 75-ton locomotive jacks, described on preceding pages, possessing all the advantageous features of the latter excepting the wheel-base. Instead of wheel-base, a special wheeled buggy can be furnished when desired. (See illustration below.)

Application Duff High-Speed Jacks (50 ton capacity) are widely used in railway shops and yards for raising loaded freight cars, Pullman cars, dining cars and coaches. They are equally well adapted for lifting bridges and steel tanks, and handling steam shovels and other heavy machinery, where the capacity required is 50 tons or less.

Operation in Cramped Quarters Due to the inverted design, giving maximum headroom for operation of lever, the jack can be used in many cramped places where it is impossible to operate other jacks. Thus, for handling tank cars having no jacking plates, or no place to apply jack except under end sills, this jack may be placed under center sill, back of truck, permitting the free removal of truck from under car. In handling loaded box cars having wooden center sills, it is possible to place jack under flooring, raising the latter until enough clearance is obtained above sills to remove nuts, thus permitting repairs to sills and replacing bolts and nuts without unloading the car.

Wheeled Buggy for 50 Ton Jack
Furnished when desired



DUFF JACKS



50-Ton High Speed Jacks

(Continued)

Model A



Patents:

<i>Dec. 26, 1916</i> <i>Feb. 11, 1919</i>	<i>May 29, 1917</i> <i>Feb. 3, 1920</i>
<i>Jan. 10, 1922</i>	

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Diameter Head Inches	Diameter Base Inches	Weight with Handle Pounds	Code Word	List Price
5036-A	50	36	24	5½	14	375	Hinge	\$220.00
5030-A	50	30	18	5½	14	335	Hawk	200.00
5028-A	50	28	16	5½	14	330	Hertel	190.00
5026-A	50	26	14	5½	14	320	Honor	180.00
5024-A	50	24	12	5½	12	310	Holly	180.00

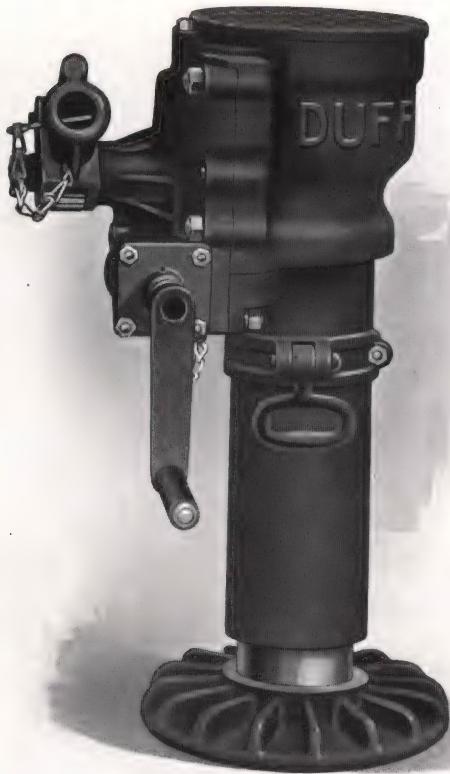
Wheeled buggy for any of above jacks. List Price \$15.00 extra

DUFF JACKS



Duff High Speed Ball Bearing Screw Jacks

*35 and 50 Tons
Capacity
Model A*



THESE jacks differ from the inverted type illustrated on the foregoing pages in having the operating mechanism located in the head, moving up and down with the load. Adapted for general railway service jacks, and for all general lifting purposes where safety and efficiency are of first importance. They are operated upward by means of a raising lever and lowered very rapidly by cranking with the lowering handle. The lowering handle is also used for fast raising *up to the load*. The handle is of the attached folding type, illustrated on page 12. An automatic positive safety clutch (patented) holds the load firmly at all times. Each jack is furnished with a steel raising lever and a crank handle for lowering. The operating mechanism is essentially the same as illustrated and described on foregoing pages.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Diameter Head Inches	Diameter Base Inches	Weight Pounds	Code Word	List Price
1577-A	50	30	18	9 $\frac{1}{4}$	12	302	Halo	\$200.00
1576-A	50	26	14	9 $\frac{1}{4}$	12	286	Heal	180.00
1592-A	35	30	17	7 $\frac{1}{4}$	14	262	High	160.00
1591-A	35	26	13	7 $\frac{1}{4}$	14	237	Hat	150.00

DUFF JACKS



Duff High Speed Ball Bearing Screw Jack *with Toe Lift*

*35 Tons Capacity
Model A*



THE full rated capacity of this jack applies to lifting on the head—the toe lifts one-half of the full rated capacity. This jack is identical in design and appearance with other high speed jacks illustrated on page 17, except for the cast steel shell which is built considerably heavier to take care of the heavy eccentric strain imposed when loads are being lifted on the toe.

The toe is of cast steel, being integral with the shell. The mechanism of this jack is essentially the same as for the inverted type illustrated in the foregoing. Each jack is furnished with a forged steel raising lever and a crank handle for lowering.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Diameter Head Inches	Diameter Base Inches	Weight Pounds	Code Word	List Price
1562-A	35	26	13	7 1/4	14	291	Haul	\$165.00

DUFF JACKS



Duff Horizontal Jack High Speed Ball Bearing Type

Application This special jack has been designed expressly for use in the horizontal position. For this reason, it is invaluable for such purposes as spreading cars while blocking for twin loading, moving structural members in bridge construction and work of this nature.

Operating Mechanism The jack is of the high speed ball bearing construction, the operating mechanism being located in the base.

Key Prevents Turning of Jack in Operation A key, guiding the standard in the shell, prevents the head of the jack from turning and slipping out of place when the jack is operated. This is a valuable time saver over the make-shift methods of using ordinary jacks with heads that turn with every stroke of the operating lever, thus frequently twisting the jack out of place and making repeated settings necessary.

Easy Operation The ratchet is so designed that a powerful leverage is possible over a wide angle of operation, as the operating strokes may be as long or as short as the operator's position and "elbow room" will permit.



DUFF JACKS



Horizontal Jack

(Continued)

35 Tons Capacity

Patented April 18, 1922



Quick-Closing Ram The guide key for the standard in the base is of the disengaging type, permitting it to be easily withdrawn by merely pressing down the tail. This leaves the standard free, so that it may be quickly spun down. Releasing the tail of the guide key permits it to spring back in place ready for the next job.

Materials and Workmanship The gears are of steel, machine cut, running on hardened steel ball races and Micro Chrome balls. The screw is milled and heat treated; the nut is of hard bronze. The standard or ram is of steel, accurately machined; the base is of malleable iron.

Operating Handle of steel, $1\frac{1}{8}$ -inch by 36 inches long, furnished with each jack.

Positive Stop A positive stop prevents danger of ratcheting jack out beyond the safe run-out of 13 inches.

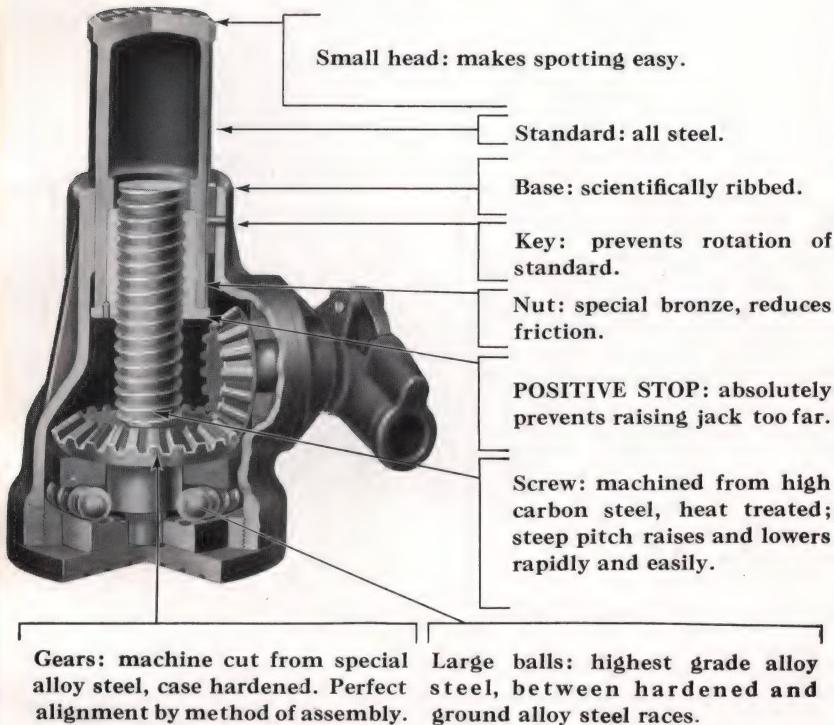
Jack No.	Capacity Tons	Length Closed	Runout or "Raise"	Weight Pounds	Code Word	List Price
3520	35	20"	13"	80	Harry	\$85.00

DUFF JACKS



Duff Journal Jacks High Speed Ball Bearing Type

(15 to 35 Tons Capacity)



ASPECIAL FEATURE of this type is the *positive safety stop* which does away with any danger of pushing the standard of the jack out of the base. Duff Ball Bearing Journal Jacks are constructed throughout of especially determined materials. All parts are machine finished and accurately fitted. No bolts are used, as these are liable to come loose, causing disalignment and damage to parts.

The ratchet case is of a new, convenient and compact design. The ratchet wheel and pawl are of selected steels, and hardened to give greatest wear and strength.

The interiors of these jacks are packed with semi-fluid grease in which all moving parts revolve. This grease is not affected by heat or cold, and will not leak out.

All the jacks are now furnished with solid steel operating lever with pinch bar end.

DUFF JACKS



Duff Ball Bearing Journal Jacks

*35 Tons Capacity
Patented April 18, 1922*



THE *positive stop* incorporated in these, as in all Duff Journal Jacks, prevents the standard being run out too far. Ease of operation is obtained as they are designed with hardened high carbon steel screw revolving in bronze nut, the combination of hard bronze and steel, affording greater strength and longer life with a lower coefficient of friction than that of any other pair of metals that could be used for the same purpose. The ball bearings used are of the most efficient type known, namely single point contact with very large alloy steel balls and large diameter race. Permanent and perfect alignment of gears is insured by the special method of attaching the bonnet and bottom plate, making the slightest springing or dislocation of these parts impossible. All gears are of drop forged steel, machine cut and case hardened. See general description herein. Furnished with solid steel operating lever, 36 inches long, with pinch bar end.

Jack No.	Capacity in Tons	Height Closed Inches	Raise Inches	Diameter of Head Inches	Diameter of Base Inches	Weight Pounds	Code Word	List Price
3509	35	9	3	3 $\frac{1}{8}$	6 $\frac{1}{4}$	50	Opera	\$55.00
3511	35	11	5	3 $\frac{1}{8}$	6 $\frac{1}{4}$	55	Optic	55.00

DUFF JACKS



Duff Ball Bearing Journal Jacks

25 Tons Capacity
Patented April 18, 1922

**Recognized Standard of
Leading Railroads**



THESE jacks are without doubt the most universally serviceable journal jacks made. Lightest in weight, they possess at the same time greater raise than any similar jacks, making possible replacement of journal brasses under conditions of soft ground, ice and snow, without resetting, as is so often necessary with jacks having shorter raise. In addition, the built-in positive stop eliminates any possibility of raising the jack beyond the safe maximum height.

All parts are made of special specification steels, except the selected bronze nut and the malleable iron base and ratchet case. A new feature is the drop forged steel top, preventing the possibility of breakage. The key in the standard prevents rotation of the jack under load and preserves the alignment of the working parts.

Each jack is furnished with an operating handle, 36 inches long, consisting of a $\frac{1}{8}$ -inch round steel bar with pinch bar end.

See sectional view herein for other details of construction.

Jack No.	Capacity in Tons	Height Closed Inches	Raise Inches	Diameter of Head Inches	Diameter of Base Inches	Weight Pounds	Code Word	List Price
2509	25	9	3 $\frac{1}{2}$	2 $\frac{7}{8}$	5 $\frac{1}{4}$	35	Orion	\$36.00
2511	25	11	5 $\frac{1}{2}$	2 $\frac{7}{8}$	5 $\frac{1}{2}$	38	Orbit	36.00

DUFF JACKS



Duff Ball Bearing Car Inspector's Jack

*Drop Forged Type
15 Tons Capacity
Patented Dec. 20, 1921
March 28, 1922, April 18, 1922*



THIS jack has all the high class characteristics of the heavier and more expensive Duff Ball Bearing Journal Jacks, and, in addition, the light weight and added strength of drop forged steel base and top. Still another feature is the convenient carrying handle, also drop forged.

The screw, bevel gears, nut and all other working parts are accurately machine finished of specially determined materials. The slightest dislocation of the gears is made impossible by the method of attachment of bonnet and bottom plate. Rapid raising and lowering is obtained by the steep pitch of the screw. Working parts are packed in semi-fluid grease which will remain unaffected by heat or cold and will not leak out. Each jack is furnished with an operating lever, 28 inches long, made of solid steel, one end being formed into a handy pinch bar. Caution:—The amazingly sturdy construction of this jack is more than ample for lifting its rated capacity, but its use should be limited to passenger, Pullman and unloaded freight cars, the larger models shown on pages 22 and 23 being recommended for the heavier loads.

Jack No.	Capacity Tons	Height Closed Inches	Raise Inches	Weight Pounds	Code Word	Diameter of Head Inches	Diameter of Base Inches	List Price
111	15	10	5	28	Oscar	2½	6¼	\$25.00

DUFF JACKS



Applied for pulling in sides of freight cars (chains and hooks
not furnished with jack)

Duff Pushing and Pulling Jacks

*For Straightening Center Sills
and Sides of Freight Cars*

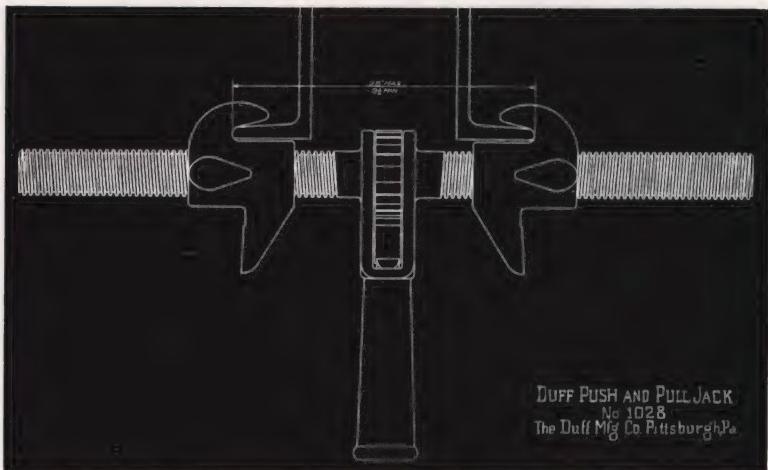
THIS new Duff Jack is designed for straightening center sills on the draft gear end of railroad cars, either by pushing apart or pulling together where bent. With chains and hooks it can also be used as shown above for pulling in sides of freight cars which have been bent outward.

The drawings on next page show jack applied for pulling as well as pushing or spreading apart the center sills.

DUFF JACKS

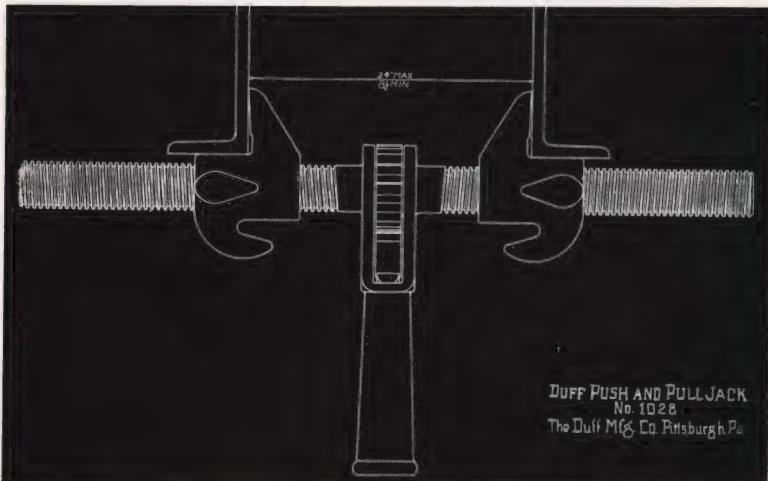


Duff Pushing
and Pulling Jacks



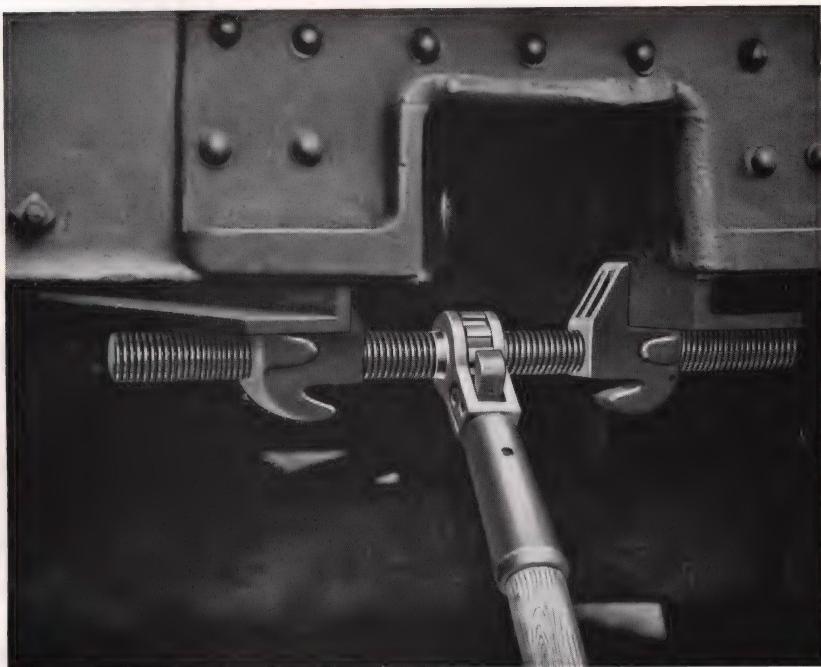
Applied for Pulling

*For straightening center sills
and sides of freight cars*



Applied for Pushing

DUFF JACKS



Applied for Straightening Center Sill—in Pushing Position

Pushing and Pulling Jacks

*For Straightening Center Sills
and Sides of Freight Cars*

THE design of this jack is extremely simple, consisting of a steel screw, ratchet with pawl, and two cast steel nuts, the latter being designed with flat projection on one side for pushing, and a hook on the other side for pulling.

The nut bearing has ample length for sustaining the eccentric stresses of both pushing and pulling. Special sizes made to order.

Each jack furnished with 24" wood operating handle.

See also pages 25 and 26.

No.	Capacity	Pulling*		Pushing*		Weight	Code Word	List Price with Handle
		Max.	Min.	Max.	Min.			
1028	10 tons	25"	9½"	24"	8½"	39 lbs.	Teft	\$25.00

*See drawing on preceding page.

DUFF JACKS



Duff Standard Speed Ball Bearing Screw Jacks



THE sectional view shows the construction of Duff Standard Speed Ball Bearing Screw Jacks. The base and outer casing of these jacks are made entirely of refined malleable iron and steel. All gears are made from special analysis high carbon steel, drop forged and hardened, and the teeth are machine cut.

The load is raised and lowered by means of a selected machinery steel screw with a special thread, revolving within a bronze nut of exceedingly great hardness and strength, made to our own special specifications.

The load is carried on large ball bearings, of the highest grade alloy steel. The complete bearing consists of two hardened and ground alloy steel plates, each having a groove in which the balls roll. The balls are carried in a cage, each ball in a space by itself, thus eliminating friction between the balls. The thrust on the bevel pinion is taken care of by another anti-friction bearing.

The ratchet construction is greatly simplified. To lower a load after raising, all that is necessary is to pull out the tool steel pawl pin which is provided for that purpose and give it half a turn. This allows the pawl pin to engage the ratchet in the opposite direction, for lowering the load.

Every part is accurately finished to gauge to insure an easy and positive movement and enable easy replacement of parts when necessary.

DUFF JACKS



Duff Ball Bearing Screw Jacks

35, 25 and 15 Tons Capacity



THESE jacks are very useful for heavy work of any character, including bridge work, car repairing, and the handling of heavy structural material. The load may be lifted with the least possible effort on the part of the operator. All of the sizes listed below have a foot lift for the convenient handling of low loads. The full rated capacity of these jacks is lifted on the head, while the foot lift is rated at one-half the capacity. The direction up or down is controlled by a spring-actuated steel pin, located on the socket lever. Each jack is designed with carrying handles, one on either side of the jack. Each jack is furnished with a steel tube lever handle.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Size of Base Inches	Diameter of Head Inches	Weight with Lever	Code Word	List Price
68	35	22	10	9 x 10 1/2	6 3/4	220 lbs.	Ofir	\$130.00
62	35	26	13	9 x 10 1/2	6 3/4	250 lbs.	Opal	138.00
67	25	22	10	8 x 11	6	170 lbs.	Oxen	90.00
61	25	27	13	8 x 11	6	200 lbs.	Onyx	96.00
66	15	22	10	5 x 9	5	120 lbs.	Ovid	60.00
60	15	26	13	5 x 9	5	132 lbs.	Omar	70.00

DUFF JACKS



Duff Ball Bearing Screw Jack

50 Tons Capacity



THIS jack is designed for heavy work. A minimum amount of effort is required to handle the load on account of the leverage provided. The base is round, 14 inches in diameter, and is strongly ribbed. The top has a diameter of $10\frac{1}{2}$ inches and contains extra large ball bearings which, due to their size and to their extreme hardness, are more efficient and durable and will withstand heavier loads than any other anti-friction bearings that could be used for the purpose. Convenient carrying handles are provided, one on either side of the frame, facilitating handling. The foot lift, rated at half the capacity of the jack, will be found very convenient for handling low loads. See description on page 28. Each jack is furnished with a metal operating lever.

Jack No.	Capacity In Tons	Height Inches	Raise Inches	Diameter of Base Inches	Diameter of Head Inches	Weight with Lever	Code Word	List Price
64	50	27	13	14	$10\frac{1}{2}$	320 lbs.	Oler	\$150.00

DUFF JACKS



Duff Ball Bearing Screw Jacks

10 Tons Capacity

*For Bridge Builders
and Heavy Trucks*



NO. 305 Jack, illustrated above, is of the inverted type, having the operating mechanism located in the base to afford maximum clearance for operation of lever in cramped quarters. The special design of the ratchet permits raising or lowering of load with short or long strokes as desired. These features make it especially desirable for bridge builders requiring, for many purposes, a jack of this kind.

In design and construction, it is similar to the regular standard speed ball bearing jacks illustrated on the foregoing pages. Large, sturdy ball bearings, and accurately machined and fitted parts, combine to make the operation easy and reduce wear and tear.

Furnished with a metal operating lever.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	List Price
305	10	14	6 $\frac{1}{4}$	40 lbs.	Otto	On Application

DUFF JACKS



Duff Telescope Screw Jacks

*15 to 40 Tons
Capacity*



NOTE the very high raise of these jacks—it being almost as great as the height of the jacks themselves when closed. They have still another advantage over the ordinary screw jacks, in that the load can be raised much more rapidly and the jacks can be used in close quarters because of the ratchet and handle construction.

The base is made of heavy cast iron and contains a machine cut nut in which the screws travel smoothly and easily. There are only eleven parts to the entire jack. Traversing bases can be used in connection with these jacks for horizontal moving—see following page.

Jack No.	Capacity in Tons	Height Closed Inches	Raise Inches	Weight Pounds	Code Word	List Price
T-11	15	8	7	40	Iago	\$22.00
T-12	15	10	9	45	Ibis	25.00
T-13	20	13	14	64	Ichō	30.00
T-14	25	16	18	75	Idol	34.00
T-15	30	16	17	85	Ieng	40.00
T-16	40	19	22	127	Ifat	45.00



Traversing Base

*For Ball Bearing
Screw Jacks
25 Tons Capacity*



THE traversing base pictured above has been especially designed for moving a jack horizontally while under a load. The frame of this traversing base is made of malleable iron and the screw of cold rolled steel.

In selecting a traversing base for any jack the price for the combination is equal to the price quoted on the jack plus the price of the traversing base as stated below.

Any of the screw jacks described on the foregoing pages can be furnished mounted on one of these bases. Each base is furnished with a wood operating handle. The specifications and the price below apply to traversing bases only.

Base No.	Capacity in Tons	Horizontal Travel Inches	Height Inches	Size of Plate Inches	Weight Pounds	Code Word	List Price
40	25	15	4	10 x 12	109	Trab	\$40.00

DUFF JACKS



Screw Jack on Traversing Base

35 Tons Capacity
For moving derailed
Locomotives, etc.



ALTHOUGH this jack has been designed for locomotive use in case of derailments and is used extensively for that purpose, it is also well suited for use as a general purpose jack, moving the load horizontally as well as lifting it.

The traversing base and the head of the jack are made of malleable iron. The screw is open hearth machinery steel—the nut within which the screw revolves is bronze.

The ratchet lever may be used at either end of the base. The base screw turns in a bronze nut and bronze bushings.

Furnished with a solid machinery steel operating lever which is also used as a carrying handle.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Horizontal Travel Inches	Weight Pounds	Code Word	List Price
S-825	35	24	10½	12	147	Inez	On applica-tion

DUFF



JACKS

SECTION II

Track or Trip Jacks

Genuine Barrett Type

THE Barrett Track or Trip Jacks illustrated herein, are the approved original Barrett patent compound lever jacks. They are provided with a trip, by means of which the load can be instantly dropped. These Trip Jacks are intended for track work only, excepting No. 10, which is a combination jack designed to lower the load gradually or drop it instantly, as desired.



Construction of Duff Genuine Barrett Track Jacks

RECOGNIZED by the leading railroads of the world as standard tools, Duff Genuine Barrett Track Jacks are used universally for constructing, surfacing, ballasting, and repairing railroad track. They combine all the qualities recommended by the Committee on Track Jacks of the Roadmasters' Association of America. Being quick acting, easy operating, and long wearing, they are peculiarly suitable for the rapid handling of track.

The toughest wear-resisting materials known to leverage engineers are used in their construction. The base of each jack is made of refined malleable iron; the rack of forged steel, oil toughened, with machine cut teeth; the pawls of drop forged high carbon open hearth steel, heat treated; the fulcrum pin of hardened high carbon rolled steel; the bearings of case hardened steel; the handle of selected ash.

An important feature of Duff Genuine Barrett Track Jacks is that they are manufactured in both double and single acting types. The single acting jacks raise on the downward movement of the lever only; the double acting jacks raise on both the upward and downward stroke of the lever. Both types are built in a large number of sizes and are adapted to every possible condition.



Showing use of lining bar as handle for Duff Track Jack equipped with square socket lever

DUFF JACKS



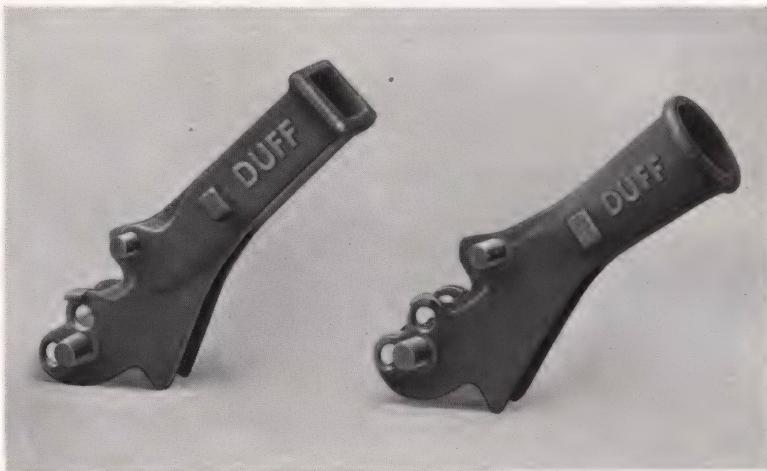
Phantom View of Improved Track or Trip Jack No. 1
Showing Simplicity of Mechanism

DUFF JACKS



Duff Genuine Barrett Track Jacks

ALL Duff Genuine Barrett Track Jacks are designed with rectangular-shaped bases, giving great strength and permitting use in confined space, thereby affording an advantage over jacks with round or bulky bases. The base of each jack is ribbed in such a manner as to combine great strength with comparatively light weight. These jacks are adapted to high or low loads by using either the top of the rack or the projecting foot below. The working parts are all accurately machine finished, and when worn can be easily removed and replaced at slight expense.



All Duff Railroad Track Jacks are furnished with Square or Round Socket Lever, as Desired

Duff Track Jacks are supplied with either a round socket lever and wooden operating handle, or a square socket lever without handle, at the option of the purchaser. The square socket lever permits the use of a standard lining bar as an operating lever.

Both types of socket lever are one-piece steel castings, assuring great strength with the minimum weight. There are no small parts, such as side plates and rivets, to break.

The Duff Genuine Barrett Track Jacks are the best designed, most carefully made, and the safest jacks known to the railroad or industrial world today. The fact that millions of Duff Jacks have been placed with American steam and street railways, is substantial evidence of their worth.

DUFF JACKS



Genuine Barrett Trip or Track Jacks

*10 Tons Capacity
Double Acting*



FOR many years the genuine Barrett No. 1 Trip Jack has been considered a standard tool by the leading railroads of the world. It conforms strictly to the requirements of the Roadmasters' Association of America. It is furnished with a one-piece steel socket lever. The leverage is compound and double acting, raising the load on both the upward and downward strokes of the lever. The load is instantly dropped from any elevation by means of the trip at the side of the socket lever. This jack is positive and quick in action and owing to the high quality materials from which it is manufactured, its maintenance cost is negligible.

No. 12, listed below, is of the same design and construction, differing only in being shorter. In ordering, specify whether round or square socket lever is desired. Trip jacks are recommended for track work only.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	With Round Socket Lever and Handle			With Square Socket Lever	
				Weight Lbs.	Code Word	List Price	Code Word	List Price
1 12	10 10	25½ 18½	13½ 8½	70 58	Arda Akron	\$22.00 22.00	Arrow Amir	\$21.00 21.00

DUFF JACKS



Genuine
Barrett
Easy-Trip
Jack No. 9

Single Acting

*Complete Patents
Pending U. S. A.
and Foreign Coun-
tries*



*Most efficient single acting Trip Jack yet developed
Note the high capacity (15 tons), light weight
(only 52 lbs.) and new easy-trip design*

(Side of frame cut away to show new trip and pawl design)

DUFF JACKS



New Duff Genuine Barrett Easy-Trip Jack No. 9

THIS jack has five cardinal features which distinguish it above all other trip jacks, including the previous types of single acting genuine Barrett Track Jacks. Single and double acting types of Barrett Track Jacks have for over 25 years been the undisputed standard for steam and electric railroads. This new jack, owing to its many superior features, is recommended instead of any single acting track jack you have heretofore been using. The five features are briefly as follows:

1. **EASY TRIP.** This jack is tripped by pulling out short pawl, as shown in cut opposite, engaging it in notch of trip just above it, and giving the handle in socket lever a quick downward movement. As shown in the photograph, this causes the inner arms of the trip to pull the tooth of the long pawl from engagement with the rack. This gives perfect positive tripping action, and, as the three engaging parts are all locked together while tripping, it is impossible for any of them to rebound and re-engage the rack during its fall. In spite of this remarkable ease in tripping, the jack cannot be inadvertently tripped.

If, in order to obtain close adjustment, it is desired to "finger down" the jack, this can be done with the greatest ease and safety in the customary manner, excepting that instead of reaching in to pull out the long pawl, the latter is manipulated by means of the trip. It will be seen from the cut opposite, that the tail of the trip is most accessible and lies conveniently close to the lug of the short pawl so that both can be operated easily and *without the slightest danger to the operator's fingers*.

2. **FEWER PARTS.** There are only 12 parts, all of simple and sturdy design, as compared with an average of 16 parts in other trip jacks.

3. **EASY OPERATION.** This jack is by far the easiest operating track jack yet designed, a fact which is immediately noted and favorably commented on by every railroad man who once operates the jack under the usual load.

4. **INCREASED LEVERAGE.** It will be noted that this jack has a capacity of 15 tons, yet is lighter in weight than the best 10-ton trip jacks heretofore used. One reason for the increased capacity is the greatly improved leverage, obtained by placing the fulcrum so close to rack as to give the pawls nearly a vertical position. Side thrust is thereby nearly eliminated, reducing the eccentric stress on base and greatly minimizing friction between front of rack and rack channel.

5. **LIGHT WEIGHT.** By the scientific balancing of stresses; by the accurate machining and fitting of working parts; and finally by expert heat treating, the surprisingly light weight of this jack has been made possible. Yet the jack is safer and stronger, and therefore more durable, than older types of jacks of nearly double its weight.

DUFF

JACKS



Genuine Barrett
Easy-Trip Jack
No. 9

*15 Tons Capacity
Single Acting*



GENERAL. This jack is the result of several years of research work, extensive tests and experiments, directed towards producing a trip jack of surpassing merit. Every feature in it will bear the closest scrutiny from an engineering and practical standpoint.

Details of construction, such as drop-forged and heat treated steel pawls and rack, high carbon electric steel socket lever, etc. accord with general description preceding.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Lbs.	Square Socket Lever		Round Socket Lever	
					Code Word	List Price	Code Word	List Price
9	15	22	13	52	Abel	\$21.00*	Abner	\$22.00†

*For use with Lining Bar. †Includes Wood Handle.

DUFF JACKS



Genuine Barrett Trip Jack No. 6

*15 Tons Capacity
Double Acting
Extra Height and Raise*



DESIGNED with greater height and raise than any of the trip jacks shown on the preceding pages, this jack is especially suitable for the use of ballast gangs. It is built with a one piece socket lever, made of heat treated electric steel. Thus, by the elimination of side plates and rivets, simple construction with great strength is obtained. The frame is heavily constructed for great strength, and is provided with convenient carrying handles on each side, as shown in illustration. The jack is furnished either with round socket lever and wooden handle, or with square socket lever to permit use of lining bar as handle. In ordering, the type of handle desired should be specified. As with all trip jacks, this type is recommended only for track work. See pages 36, 37 and 38 for details of construction.

Jack Number	Capacity in Tons	Height Inches	Raise Inches	With Round Socket Lever and Handle			With Square Socket Lever		
				Weight Lbs.	Code Word	List Price	Weight Lbs.	Code Word	List Price
6	15	32	19	110	Fude	\$32.00	105	Flag	\$31.00

DUFF JACKS



Duff Coal Mine Jacks

Trip Type
2½ and 4 Tons Capacity



Especially Suitable for Adjusting Coal-Cutters

THESE jacks are especially suitable for adjusting coal cutters. Being built for service in coal mines, they are of the simplest design, so that they cannot become clogged with fine rock, dirt and coal.

These jacks have only three operating parts, each simple and rugged; namely the machine cut steel rack, the socket lever, and the retaining pawl. The jack may be lowered notch by notch when under load, or dropped instantly when free. Furnished with wood operating handle.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	List Price
226	2½	18½	10¾	31	Wool	\$18.00
223	4	22	13	50	Wayne	\$25.00

DUFF JACKS



Combined Trip and Automatic Lowering Jack No. 10

*Genuine Barrett,
10 Tons Capacity
Double Acting*



THIS jack embodies a combination of the features of the automatic lowering and trip jacks. It is a veritable "jack of all trades." It can lift loads, lower loads gradually, or trip or drop loads from any elevation in its range.

Technically, it is a compound lever, double acting automatic lowering and trip jack. The load is instantly dropped by the small trip at right side of operating lever, or gradually lowered by half a turn of the eccentric at the side of the frame, whichever is desired.

This jack enjoys great popularity wherever it is used, due to its adaptability to so many widely different kinds of work. Furnished with an operating handle of wood.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	List Price
10	10	25½	14	75 lbs.	Jepo	\$30.00



SECTION III

Automatic Lowering Jacks Genuine Barrett Type

THE term "automatic lowering" is applied to these Barrett jacks to distinguish them from our trip jacks, which drop the load instantly. Automatic lowering jacks are ratcheted up or down, notch by notch, the direction being reversed by shifting the locking device at the side of the frame. The genuine Barrett compound ratchet lever is used in all these jacks except as otherwise mentioned on the following pages. Duff Genuine Barrett Jacks are the result of forty years' experience and observation of actual service conditions, and are designed with a view to greatest safety, lowest repair cost, and convenient operation. This line includes:

- 1 Railroad Car Jacks
- 2 Bridge Jacks
- 3 General Purpose Jacks
- 4 Emergency Electric Car Jacks
- 5 Motor Truck Jacks
- 6 Automobile Jacks



Construction of Duff Genuine Barrett Automatic Lowering Jacks

BEING built in a large variety of styles and sizes, Duff Genuine Barrett Automatic Lowering Jacks are adapted to every lifting requirement coming within the range of their capacities—irrespective of how “different” conditions may be.

Every known improvement suggested by our forty years of jack manufacturing and engineering experience, is incorporated in these models, making them of the highest mechanical perfection.

Without a doubt they are the fastest, easiest operating, and safest jacks of this type yet designed. All lost motion and much friction is eliminated by the accurate machine finishing of moving parts.

All materials used in construction, except as otherwise noted, are as follows: Frame or base, malleable iron; rack, forged steel, oil toughened, with machine cut teeth; pawls, drop forged open hearth steel of high carbon, heat-treated; fulcrum pin, hardened high carbon rolled steel; bearings, case hardened steel; handle, selected ash.

All of the jacks described in the following section, except No. 8, are made with a toe-lift for use where there is not sufficient clearance to place the top of the jack under the load. The toe-lift is capable of raising one-half of the rated capacity of the jacks.

These jacks are very widely used by industrial concerns, telephone and telegraph companies, street railway companies, steam railroads, mines, mills, contractors, truckmen, etc. Many thousands of them are in use.

Careful observation of the performance of Duff Genuine Barrett Automatic Lowering Jacks under actual service conditions, will prove conclusively that they are unexcelled in safety, low repair cost, and easy and convenient operation.

DUFF JACKS



Genuine Barrett Automatic Lowering Jacks

*5 Tons Capacity
Double Acting*



THESE jacks are made in a variety of heights for general lifting purposes. They are particularly adapted to the rapid handling of mining machinery, mining cars, agricultural machinery, light and narrow gauge track, etc. An eccentric at the side controls the reversing mechanism. A half turn of this eccentric changes the direction of the jack.

These jacks are double acting, lifting the load on the up and down strokes of the lever. See description on preceding pages covering materials and construction. Furnished with wood operating handle.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight Pounds	Code Word	List Price
13	5	14	6½	29	Atlas	\$15.00
50	5	16	8	35	King	16.00
51	5	21	13	42	Duke	18.00



Genuine Barrett
Automatic
Lowering Jack
No. 2

*10 Tons Capacity
Double Acting*



No. 2 is a General Service Jack of Wide Popularity

USED extensively by contractors, truckmen, industrial concerns, street railway companies and others requiring a jack suitable for general lifting purposes. A great favorite for all-around service. It has no equal for strength, safety, easy operation and moderate cost. Being double acting, the load is moved on both up and down strokes of operating lever. The direction of movement is reversed by half a turn of eccentric at side of the frame. A valuable feature is that this jack is absolutely positive in its action, and can be operated at any angle whatsoever. Its rugged construction conforms with the detailed description given on page 47. Furnished with round socket and wood operating handle, or with square socket, for use with crow bar or lining bar as operating lever.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Lbs.	Square Socket Lever		Round Socket Lever	
					Code Word	List Price	Code Word	List Price
2	10	21	10	70	Buka	\$24.00*	Bote	\$25.00†

*For use with Lining Bar. †Includes Wood Handle.

DUFF JACKS



Genuine Barrett Automatic Lowering Jack No. 518

*10 Tons Capacity
Single Acting*



WITH the same capacity and dimensions as the No. 2, this jack is available for those preferring a single acting jack for all-round use, moving the load on the down stroke of the lever only. It is especially serviceable for bridge work. The operating mechanism has many improvements over that of the No. 18 jack, which it replaces, and is the same highly efficient type developed for the new No. 519 jack, described on page 53. Details of materials used are described on page 47. Furnished with either round socket and wooden operating lever, or square socket, for use with lining bar or crow bar as operating lever.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	With Round Socket Lever and Handle			With Square Socket Lever	
				Weight Lbs.	Code Word	List Price	Code Word	List Price
518	10	22	12	70	Rand	\$25.00	Riga	\$24.00

DUFF JACKS



Genuine Barrett Automatic Lowering Jack No 3

*12 Tons Capacity
Double Acting*



THIS jack is used for lifting heavy machinery and all general lifting purposes, and is identical in construction with No. 2, but is heavier and stronger, having a capacity of 12 tons and a raise of 15 inches. It will operate at any angle. It is double acting, raising the load a notch at a time on both the upward and downward strokes of the lever. The reversing mechanism is controlled by an eccentric at the side of the frame, a half turn of which changes the direction of the jack. Furnished with a wood operating handle.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	List Price
3	12	26½	15	100 lbs.	Cimo	\$30.00

DUFF JACKS



Genuine Barrett
Automatic
Lowering Jack
No. 4

15 Tons Capacity
Double Acting



No. 4 is a heavy type General Service Jack

IT is one of the most substantial and efficient jacks of the Barrett type. The frame or base has a broad area and is of stout construction, of ample strength for its rated capacity, and is provided with carrying handle.

The lifting bar is built extra heavy and all working parts in proportion. Operates at any angle. Being double acting, it raises or lowers the load on both the upward and downward strokes of the lever.

The eccentric at the side of the frame controls the reversing mechanism.
Furnished with a wood operating handle.

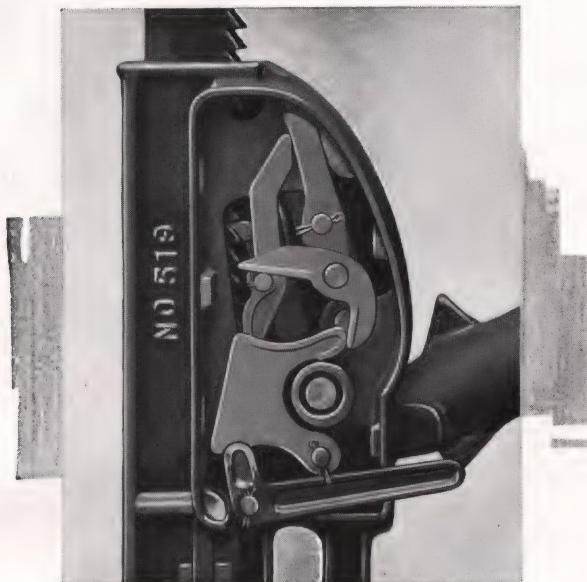
Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	List Price
4	15	22	10	106 lbs.	Data	\$35.00

DUFF JACKS



Duff Genuine Barrett Car Jack No. 519

*Improved Model of the well-known
Barrett Car Jacks Nos. 19 and 219*



THE Duff Car Jack No. 519 is an improved and re-designed model of the Barrett Car Jacks Nos. 19 and 219 which for twenty-five years have enjoyed universal popularity. The best and most essential characteristics of the old jacks are retained in the new model and combined with many important improvements.

OPERATING MECHANISM

All working parts, as well as the shield, are drop forged. All screws have been eliminated, as they have a tendency to work loose. The springs are made of brass to prevent rust and resultant breakage. The reversing lever is so designed that it will not jam the mechanism if hit with the bar or a hammer.

HEAT TREATED, FINE-TOOTH RACK

The rack is of special high carbon steel, drop forged, and heat treated. The teeth are machine cut and of fine pitch, as used in the old No. 219, facilitating operation to a notable extent by reducing by 30% the amount of raise per stroke of lever. It has the advantage of heat treatment, by which greater elastic limit, and greater tensile strength are obtained. *The net result, as demonstrated by practical tests, is easier operation and increased lifting capacity, with ample factor of safety. In these respects, this jack excels all other 15-ton car jacks of similar type now on the market.*

DUFF JACKS



Duff Car Jack No. 519

*Genuine Barrett
15 Tons Capacity
Single Acting*



THE single pointed pawls have been adopted in this jack. They are made of high carbon steel, heat treated, and are set at such an angle as to reduce friction on the front of the rack and channel of base to a minimum.

The socket lever is cast of high carbon electric furnace steel, heat treated, and can be furnished with either round or square socket, at the option of the purchaser, to fit the wood operating handle or the standard lining bar.

The fulcrum pin is of high carbon steel, hardened with drive fit in socket lever, and trunnions in case hardened steel bushings.

Loss of the shield which covers the reversing mechanism will not affect the operation of the jack in any way.

Heat treatment of the important parts and wearing surfaces, are guarantees of long life and efficient service.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight Pounds	Code Words		List Price
					With Square Socket L	With Round Socket L	
519	15	28	17	96	Fable	Flirt	\$40.00

DUFF JACKS



Duff Car and Bridge Jack No. 539

*Genuine Barrett
15 Tons Capacity
Single Acting*



NO. 539 is useful for removing and replacing car couplers and for bridge work. Easy operation is secured by the use of a large number of small teeth on the lifting rack. The effort required on the lever is reduced so greatly that strokes can be made very quickly. Hence the lift is very rapid. Careful attention paid to strengthening every part subject to wear or strain insures long life. Closed-end, grease packed bushings keep out grit and protect the trunnions against wear by affording perfect lubrication. The lifting and lowering mechanism is the same as that used on Jack No. 519, described on foregoing pages. Furnished with round socket lever and wooden handle or square socket lever for standard lining bar.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Size of Bar Inches	Weight Pounds	Code Words		List Price
						With Square Socket L	With Round Socket L	
539	15	22	11	2 1/4 x 1 3/4	78	Faron	Fury	\$40.00

DUFF JACKS



Duff Car and Pole Jack No. 249

*Genuine Barrett Type
15 Tons Capacity
Single Acting*



THIS extra tall jack, being 35 inches high, is equally well adapted for handling railroad cars, telephone and telegraph poles. It is easily carried and applied, being provided with convenient handles.

The design of the operating mechanism is the improved genuine Barrett, including simplified reversing mechanism, operated by a convenient reversing lever; shield which is removable without disturbing the working parts; double pointed pawls, set in true vertical position, so as to operate with minimum amount of friction between rack and base channel; refillable, grease packed, closed-end bushings and all the well-known high class features of the genuine Barrett construction.

Jack Number	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever (lbs.)	Code Word	List Price
249	15	35	24½	110	Sword	\$50.00

DUFF JACKS



Showing Jack No. 239 about to replace car on the track. Note that the jack is blocked and that the claw swings out away from the jack

Genuine Barrett Emergency Car Jack No. 239

*Also well adapted for a wide variety of other
lifting services*

NO. 239 is one of the most popular jacks ever built. It is designed especially as an emergency car jack for use by electric railways in case of tie-ups, derailments, and accidents. But owing to the swivel claw feature and the all-around adaptability of the jack, it has become very popular as a general purpose jack and is used extensively in mines, shops, steel mills, and by contractors, ship-builders, etc.

The swiveling claw is hung on a ball-and-socket joint and swings sideways 120 degrees, facilitating the placing of the jack in close quarters so that the best clearance can be obtained for the operation of the lever. It can be placed vertically or inclined up to a 15 degree angle, and will lift the full rated load under this condition both on top and toe, as long as the top is supported against the side of the load. The maximum vertical angle of operation is 40 degrees for lighter loads.

By reason of the free movement of the claw away from the frame of jack, a derailed car is quickly lifted and moved horizontally to the track. Absolute freedom from all complicated features or intricate parts guarantees economical opera-

DUFF JACKS



Genuine Barrett Jack No. 239

*Emergency Car and
General Service Jack
15 Tons Capacity
Single Acting*



tion and insures unusual durability. Many of the leading street railways of this country carry a No. 239 on every car, finding that oftentimes the presence of one jack in a single accident repays the cost of the entire jack equipment.

The design and construction of the jacks are such as to combine great strength with light weight. The important working parts are drop forged and the main lifting parts are made from high carbon steel, subjected to special heat treatment. Furnished with a wood operating handle.

Jack No.	Capacity in Tons	Height of Top* Inches	Height of Toe* Inches	Raise Inches	Weight Pounds	Code Word	List Price
239	15	22	3	10½	110	Emcy	\$55.00

*When jack is lowered.

DUFF JACKS



Barrett Geared Automatic Lowering Jack No. 29

*25 Tons Capacity
Single Acting*



THIS jack has a lifting capacity of 25 tons, and is convenient for the rapid handling of heavy loads of any character. It is single acting, raising and lowering the load on the downward stroke of the lever only. The leverage is so compounded by gears that operation under the maximum load is greatly facilitated. The gears are machine cut and heat treated, as are all other moving parts, resulting in quick, easy, and positive action. This jack has a forged steel foot lift, which is useful in handling low loads. There are no intricate parts or complicated features to this jack to wear or become broken. The high class materials used afford the lightest possible weight for a jack as powerful as this, at the same time insuring a wide margin of safety. See page 47 for complete description of materials and construction. Furnished with a wood operating lever.

Jack Number	Capacity in Tons	Height Bar Down Inches	Raise of Bar Inches	Weight with Lever	Code Word	List Price
29	25	28	17	190 lbs.	Star	\$95.00

DUFF JACKS



Genuine Barrett Journal Jack No. 8

*Quick-Acting
Journal Jacks
10 Tons Capacity*



THIS jack is used principally for raising and lowering trucks to permit easy removal and replacing of journal brasses. After raising the jack, the direction is reversed by half a turn of the eccentric at the side of the frame. Furnished with a wooden operating handle. See page 47 for materials used in construction. For other types of journal jacks see pages 21 to 24.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	Action	List Price
8	10	11	5	52 lbs.	Hoke	Double	\$22.00



Traversing Base for Automatic Lowering Jacks

25 Tons Capacity



THIS base is designed for moving a jack horizontally while under a load. It has many uses, but is particularly suitable as a car replacer.

The base is made of refined malleable iron, the screw of cold rolled steel.

Any of the automatic lowering jacks shown in this catalog can be mounted on this traversing base.

In selecting a traversing base for any jack, the price for the combination is equal to the price quoted on the jack plus the price of the traversing base, as per table below. Each traversing base is furnished with a heavy wood operating handle. The price below is for the traversing base only.

Base No.	Capacity in Tons	Horizontal Travel Inches	Height Inches	Size of Plate Inches	Weight Pounds	Code Word	List Price
40	25	15	4	10 x 12	109	Trab	\$40.00

DUFF JACKS



Duff Geared Motor Truck Jacks

*Genuine Barrett
3-5 Tons Capacity*

*Standard Equipment
on Leading Trucks*



THE leverage is so compounded by gears that raising is accomplished with only one-third the effort required by direct leverage. Only materials of the highest grade are used in these jacks—the frame is refined malleable iron, the rack is high carbon steel, machine cut and heat treated. All of the working parts are heat treated wherever necessary to guarantee long wear.

All moving parts are accurately machine finished, insuring perfect mesh, and making each stroke easy, precise, and free from uneven contact and excessive wear. Each jack is thoroughly tested before shipment. Furnished with a metal operating handle.

No. 200 jack is regularly furnished with flat top, although curved top can be furnished if desired. Furnished as standard equipment by many of the foremost truck manufacturers. Also widely used in garages where great strength and durability are required.

Jack Number	Capacity in Tons	Height Inches	Raise Inches	Weight with Lever	Code Word	List Price
100	3	11	6	17½ lbs.		
200	5	13	6¾	30 lbs.	Comet Autojax	On application

DUFF JACKS



Duff Universal Motor Car and Truck Jack No. 411

2½ Tons Capacity

Patented March 28, 1922



THIS jack is without an equal for convenience and ease of operation. The operating handle is twice as long as the ordinary jack handle, making it easy to operate on account of the greater leverage.

The long handle easily clears all obstructions at either the front or rear of the car, and may be used to place the jack in position and remove it. When not in use, the handle uncouples to half its length, easily fitting into the smallest tool box.

By means of an adjustable foot-lift, the jack can be instantly made to fit under the lower axle of any car. The range of adjustment is wide enough to handle any car in any position on the road or in the shop.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Foot Lift Adjustment		Weight with Lever	Code Word	List Price
				Lowest	Highest*			
411	2½	11	7	4 in.	10 in.	20 lbs.	Duva	\$15.00

*Not including "raise." Size of base, 4½" x 7"

DUFF JACKS



Duff Automobile Jacks

*Genuine Barrett
1 Ton Capacity*



THIS jack meets, at a very moderate price, all requirements as to lifting capacity and different axle heights of the great majority of passenger cars and light commercial motor vehicles. The footlift is of the quickly adjustable, sliding type, instantly set at any height on the rack to fit under car axle, and reserving the entire "raise" of the lifting rack for actual lifting of the car above the ground.

Great strength and durability are obtained by the use of high carbon steel of special analysis. The teeth are accurately machine cut. The scientifically ribbed base forms an I-beam section which combines lightest weight with greatest strength. The points of the lifting pawls are machined, insuring perfect mesh with rack, and making lifting easy. Jack is guaranteed to lift 2,000 lbs. on the head and 1,000 lbs. on the footlift. Furnished with 18 in. steel handle.

Jack Number	Capacity in Tons	Height Inches	Raise Inches	Foot Lift Adjustment		Weight with Lever	Code Word	List Price
				Lowest	Highest*			
08	1	11 $\frac{3}{4}$	6 $\frac{3}{4}$	4 $\frac{1}{2}$ in.	11 $\frac{1}{2}$ in.	11 $\frac{1}{4}$ lbs.	Mecca	On application
09	1	9 $\frac{3}{4}$	5	4 $\frac{1}{2}$ in.	9 $\frac{3}{4}$ in.	10 lbs.	

*Exclusive of "raise." Size of base, 4"x6"



SECTION IV

Oil Well Jacks

Barrett Type

Gallagher Type

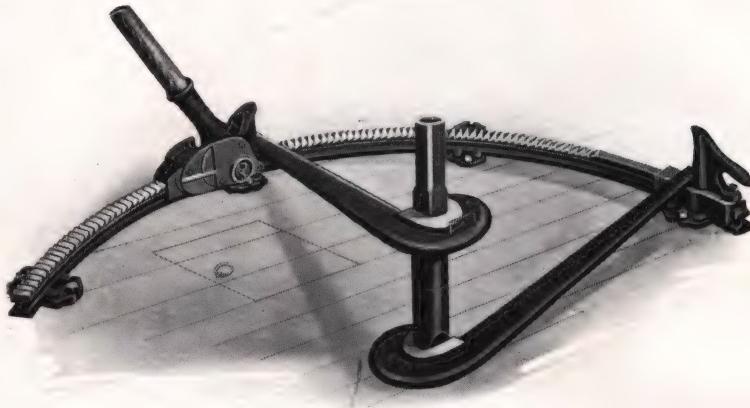
THESE jacks are designed for wrenching and unwrenching oil well tools. Both the Barrett-Gallagher Straight Line Jacks and the Genuine Barrett Circle Jacks are universally known in the oil field. The selection of one type or another is merely a matter of individual preference. Both types are made from the best materials obtainable. The rail or "rack" of each jack is a special rolled section of open hearth machinery steel with machine cut teeth. The operating mechanism is simple and rugged in construction. In each jack the action is positive and quick; the movements simple and easy.

DUFF JACKS



Duff Oil Well Jack No. 1-OW

*Genuine Barrett
Double Acting
Patented March 14, 1914*



*Double Acting Circle Jack for wrenching
and unwrenching Oil Well Tools*

THE cut above shows the Duff Genuine Barrett Double Acting Jack No. 1-OW as applied for wrenching and unwrenching oil well tools. (The wrenches shown are not furnished with the jack.) After setting up a joint, the jack will, by half a turn of the eccentric, automatically reverse itself sufficiently to relieve the pressure on the wrench handle; the pawls can then be easily pulled out and the jack pushed back to the end of the rack. Spring levers are entirely dispensed with. This jack is double acting, moving one-half notch on each forward or backward stroke of the handle.

In this tool are found all the qualities essential to a perfect oil well jack; its action is quick and positive; the rack, pawls, and fulcrum pins are machined from special analysis steel, and all wearing parts can be readily duplicated. Furnished with wood operating lever.

Jack Number	Action	Capacity Tools with Squares up to Inches	Length of Rack	Radius of Rack Inches	Weight Complete Pounds	Code Word	List Price
1-OW	Double	4	8' 5"	36	200	Uria	\$65.00

DUFF JACKS



Duff Oil Well Jack No. 1-SA

*Genuine Barrett
Single Acting
Patented Feb. 14, 1914*



*Single Acting Circle Jack for wrenching
and unwrenching Oil Well Tools*

THIS jack is single acting, moving one full tooth space at each alternate stroke of the lever. When it is desired to release the wrench handle after tightening a joint, the pawls must be pulled out under tension, as the jack will not reverse itself automatically, being single acting. This is the main difference between this jack and the double acting one described on the foregoing page.

This jack has not as great a range of usefulness as the double acting styles, but it is well adapted for any occasion when the reversing feature is not necessary.

The material and workmanship in this jack are of the same high grade as the reversing jacks. The rack is a special rolled section of open hearth machinery steel. Each jack is furnished with wood operating lever.

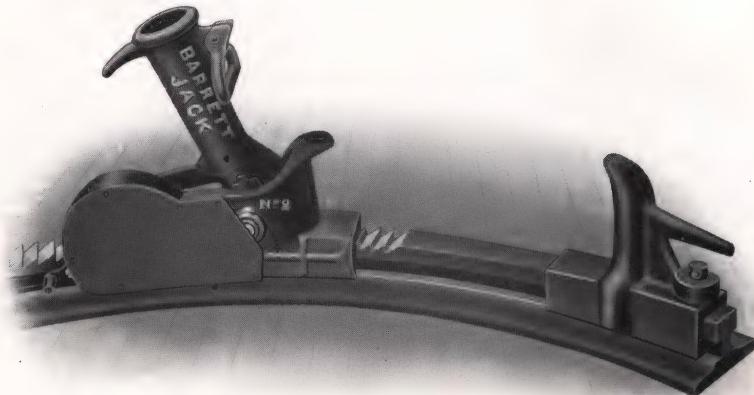
Jack Number	Action	Capacity Tools with Squares up to Inches	Length of Rack	Radius of Rack Inches	Weight Complete Pounds	Code Word	List Price
1-SA	Single	4	8' 5"	36	190	Wang	\$65.00

DUFF JACKS



Duff Improved Oil Well Jack No. 2-OW

*Genuine Barrett
Double Acting
Improved Model*



Note the Wide Flanged Rack

NO. 2 is now furnished with new patented Duff Genuine Barrett operating mechanism and steel socket lever. The above illustration shows the redesigned Oil Well Circle Jack No. 2-OW, the rack of which is stiffened by a very wide flange which overcomes the tendency of the rack to bend sideways under the severe strains set up when wrenching and unwrenching the very heaviest tools. Rack plates are made unnecessary by the use of this new rack. In other respects this jack is the same as the old No. 2 model; all parts on the new style are interchangeable with the old style, including the rack, so that users of the old style No. 2 may replace the rack on same with the new style rack. The operating mechanism is double acting and automatically reversible. Furnished with wood operating lever.

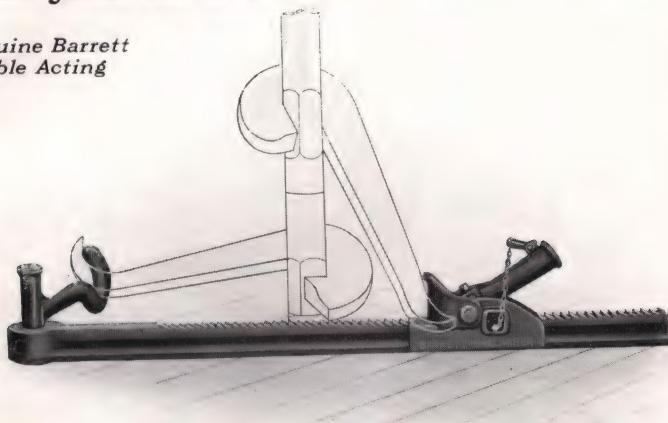
Jack Number	Action	Length of Rack Feet	Radius of Rack Inches	Weight Complete Pounds	Code Word	List Price
2-OW	Double	9	42	420	Volt	\$102.00

DUFF JACKS



Duff-Gallagher Straight Line Oil Well Jack No. 202

*Genuine Barrett
Double Acting*



*Redesigned and Improved
For wrenching and unwrenching Oil Well Tools*

THIS jack is a redesigned and improved model of the well-known Gallagher straight line jack of which we are the exclusive manufacturers. The best and most essential characteristics of the Gallagher principles are retained and combined with the genuine Barrett operating mechanism.

The rail or rack of this improved jack is a special rolled section of open hearth machinery steel, with machine cut teeth. Being double acting, this jack is automatically reversible.

As in the Barrett circular jacks, the rack is stationary and the cage is moved one-half notch on each forward and backward stroke of the lever. The pressure exerted on the wrench handle does not exert any sideway strains or tension on the rack or cage; friction is therefore reduced, making operation positive and easy. The hook is so arranged as to permit wrenching high up. Furnished with wood operating lever.

Jack Number	Action	Capacity Tools with Squares up to Inches	Length of Rack Feet	Weight Complete Pounds	Code Word	List Price
202	Double	5	6	350	Vidde	\$102.00

DUFF JACKS





SECTION V

Special-Purpose Jacks

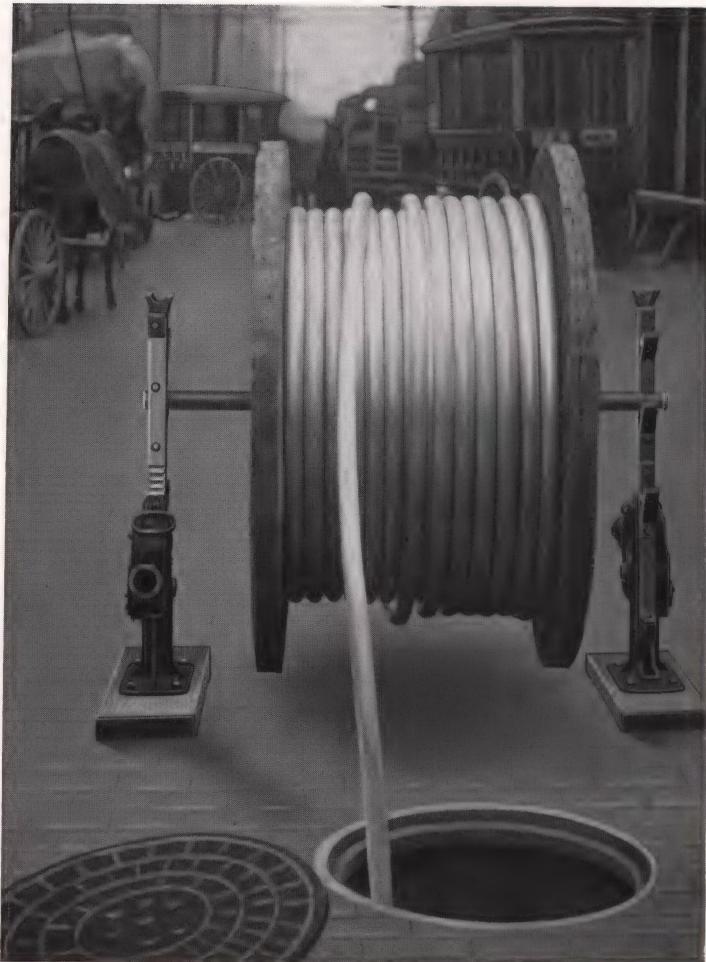
Cable Reel Jack
Pipe Forcing Jack
Motor Armature Lifts

THE jacks described in this section are special tools designed for specific purposes. Each jack or device herein cataloged commands a prominent position in its respective field. The engineering department of The Duff Manufacturing Company, devoted entirely to lifting jack engineering and its many problems, is always available for the designing and development of jacks for special purposes, or for the modification of any standard sizes of Duff Jacks to meet individual requirements.

DUFF JACKS



Duff Genuine Barrett
Cable Reel Jacks



THESE jacks are designed for the rapid and convenient handling of all types of heavy cable reels, as shown in the illustration above. The rack is provided with three cast steel hooks at various heights, so that reels of different diameters may be picked up quickly, with the least amount of jack adjustment.

The operating mechanism is the same as described under Automatic Lowering Jacks Nos. 2 and 4 herein, and the rapid and easy action of these designs permits lifting cable reels many times faster than where screw jacks are used. They are

DUFF JACKS



Genuine Barrett Cable Reel Jacks

*10 and 15 Tons
Maximum Capacity*

Double Acting



easily the most efficient and widely employed jacks available for cable reel purposes, being used by many leading telephone and telegraph companies, such as the New York Telephone and Telegraph Company.

The capacity of a pair of these jacks is 10 and 15 tons, for Nos. 2-CR and 4-CR respectively, when the load is supported on the swivel top; and 6 and 9 tons respectively, when the load rests on the top hook; somewhat greater loads are supported on the lower hooks.

Each jack is bolted to an oak base, protected on each end by steel caps, as shown. A wooden handle is furnished with each jack. In addition to the standard sizes of hooks listed below, special sizes can be made to order.

Jack No.	Capacity in Tons	Height to Top Inches	Height to Top Hook Inches	Height to Second Hook Inches	Height to Lower Hook Inches	Raise Inches	List Price Each
2 CR	6 to 10	38	34½	27½	18½	10	\$50.00
4 CR	9 to 15	39¼	34½	28	19	10	65.00

DUFF JACKS



Duff Motor
Armature
Lift
No. 804

*Genuine Barrett
Type*



CONSTRUCTED throughout of iron and steel. The truck is provided with either flat or flanged wheels as desired, is arranged for a track of 24-inch gauge, and has a side adjustment of 6 inches. The jack used is the well-known Duff Genuine Barrett, having a cradle top with wood rolls, designed to carry a load of 3 tons.

A flat or special top can be furnished if desired.

Furnished with a wood operating handle.

When ordering always send sketch showing depth of pit, diameter of armature, and conditions under which lift is to be used. Separate schedule of discounts applies. Arranged for a pit about 4 feet deep, dimensions are:

Width Inches	Length Inches	Gauge Inches	Height Inches	Raise Inches	Side Adjustment Inches	List Price
29	33	24	36	24	6	\$75.00

DUFF JACKS



Duff Motor Armature Lift No. 805

*Wheel and
Screw Type*



THE wheel and screw motor armature lift consists of a steel frame, provided with flat or flanged wheels as desired, arranged for a track of 24-inch gauge. A large hand wheel revolving on ball bearings raises and lowers the screw, which is mounted on a sliding base, and has a side adjustment of 6 inches. The capacity is 3 tons.

This armature lift is somewhat slow in operation but has a fine adjustment and is sometimes more practical than the other type with its long handle.

When ordering, always send sketch showing depth of pit, diameter of armature, and conditions under which lift is to be used. Separate schedule of discounts applies.

Arranged for a pit about 4 feet deep, the dimensions are:

Width Inches	Length Inches	Gauge Inches	Height Screw Down Inches	Raise of Screw Inches	Side Adjustment Inches	List Price
29	33	24	36	26	6	\$75.00

DUFF JACKS



Duff Pipe Forcing Jack

Genuine Barrett Type



Forcing 2-inch gas pipe under railway track in background—a distance of 60 feet.



THE Duff Genuine Barrett Pipe Forcing Jack is used for forcing pipe under lawns, sidewalks, street crossings, and railway tracks, thereby saving the large expense and inconvenience of ditching and replacing.

It consists of a jack traveling on a rail or "rack," operated with a handle. At the front of the jack is a groove and clamp for holding pipe from $\frac{3}{4}$ to 4 inches in diameter. The rack has machine-cut teeth, and is provided with bolts for securing to a plank and carries two guides for holding pipe in line.

The use of this jack is extremely simple. A trench about 15 feet long is dug for its reception. The pipe is then placed in position and forced forward the full length of the rack. The jack is then drawn back to its starting point on the rack and a new section of pipe is added to the first section and forced forward. This operation is repeated again and again until the desired distance is reached.

DUFF JACKS



Duff Pipe Forcing Jack

Genuine Barrett Type



*Forces $\frac{3}{4}$ - to 4-inch pipe from 60 to 300 feet under sidewalks,
streets, railroad tracks, etc.*

Will work against 30,000 pounds resistance

PIPE may be forced in this manner for distances varying from 60 to 300 feet, depending upon the softness of the soil and the thickness or strength of the pipe used. By digging short trenches at suitable distances from each other, pipe can be forced through the intervening ground. In this way large contracts may be completed in minimum time and with great savings. The front or driving end of the pipe should be provided with a section of pipe one or two feet long of a size larger than the pipe to be laid. At the front of this section it is best to place a coupling turned to a cutting edge. This pilot will cut its way straight through all roots or minor obstructions without being deflected.

This jack has been thoroughly tested and has often been found to pay for itself in a single job. It is constructed throughout of malleable iron and steel. The interior working parts are of steel, heat treated, and all parts are machine finished. This jack will work against any resistance up to 30,000 pounds and is recommended for forcing pipe of all sizes up to 4 inches in diameter. Furnished with wood operating handle.

Jack Number	Capacity Tons	Total Length Feet	Travel of Cage Feet	Weight Pounds	Code Word	List Price
125	15	8½	7½	307	Pipe	\$75.00

DUFF JACKS



SECTION VI

Trench Braces

Dunn Patents

DUFF All-Iron Extensible Trench Braces—commonly called ditch jacks—have long been recognized as a means of materially reducing labor costs. The old style wooden struts and wedges are costly, consuming valuable time in placing in position, are inadequate for guarding against cave-ins, and are so mutilated at the end of a job that they can rarely be used again for bracing. Duff braces have none of these disadvantages and can be used season after season in trenches of any width. The fact that millions of them are in use both in this country and abroad is substantial evidence of their worth.

DUFF JACKS



Duff (Dunn Patent) Extensible Trench Braces

DUFF Braces are used by modern contractors instead of the old-fashioned timber braces and wedges which are unsafe and dangerous and often mean a serious loss of profits. Duff All-Iron Braces when once placed in position grip the sheeting firmly. The passing of heavy vehicles, the vibration of trench machinery and careless laborers cannot jar them loose. When trenches are found to have water at the bottom or where they are dug in sandy soil, Duff braces should be used entirely, so that any loosening of the sheeting can be taken up at once by merely giving the screw handle a turn instead of having to cut wedges and force timber braces into place.

Duff braces automatically adjust themselves to any angle by means of the ball-and-socket joints at each end and with the aid of the lugs on the face of each shoe end, which sink deep into the sheeting, hold firmly regardless of any sliding or unevenness of the sheeting.

The economy of Duff Trench Braces is apparent when it is considered that they are indestructible and can be used again and again in trenches of varying widths. Duff braces are fastened tight in a few seconds with a few turns of the screw handle, and hence save many dollars in labor cost. Costly cave-ins are eliminated



A characteristic example of efficient, economical, and safe bracing in street excavation work. An effective arrangement of Duff All-Iron Extensible Trench Braces affording plenty of working space.

DUFF JACKS



forever. As Duff braces are very light and compact they are quickly and easily packed and transported from job to job. The materials used in the manufacture of Duff braces—forged steel and refined malleable iron—were selected as the result of many tests under the most severe conditions. One set of braces can be used season after season in trenches of varying widths by merely changing the tubing, which is standard gas pipe.

The Duff All-Iron Brace is intended for all ordinary size trench work. The Combination Screw and Timber Brace is designed for bracing trenches of extra large width and depth, where the use of Duff All-Iron Brace would be impracticable. This style of brace is also used for vertical bracing in mines, subways, excavations, etc.

Many years of successful use in trenches, mines, subways, etc., have demonstrated the practicability of Duff braces. The fact that the number used in this country and abroad runs way into the millions, is ample evidence of their worth.



Laying a large sewer at Washington, D.C. Duff Combined Screw and Timber Braces were chosen as the most economical and effective braces for use in this wide and deep trench.

DUFF JACKS



Duff All-Iron Extensible Trench Braces

(Dunn Patent)



*Note the Ball-and-Socket Joints which
adjust themselves automatically*

To determine size needed, take extreme width of trench, deduct for planking on both sides of trench (usually about 8 inches), and several inches more for variations in cut, and remainder will give size of brace wanted, the screw being extended to tighten brace in position. The 1½-inch screw is the standard, having sufficient strength for all ordinary work. See general description preceding.

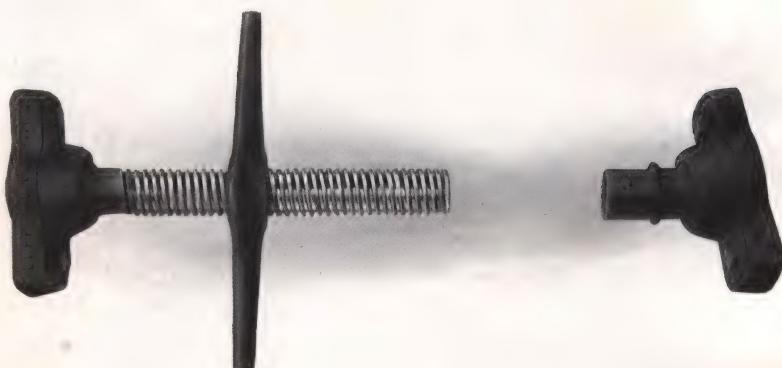
Pipe and Screw Diameter Inches	Length of Brace Closed Inches	Length of Screw Inches	Safe Extension of Screw Inches	Weight per Dozen Pounds	Code Word	List Price per Dozen
1½	16	11	6	200	Abaft	\$23.00
1½	18	12	7	210	Aband	23.00
1½	21	14	8	222	Abase	24.00
1½	24	14	8	234	Abba	24.00
1½	27	16	9	246	Abdal	26.00
1½	30	16	9	256	Abear	26.00
1½	36	18	10	280	Abet	27.00
1½	42	18	10	312	Abib	28.00
1½	48	18	10	325	Acme	29.00
2	36	18	10	542	Ader	51.00
2	42	18	10	564	Acorn	52.00
2	48	18	10	586	Ague	53.00
2	54	18	10	608	Afar	54.00
2	60	18	10	630	Alert	55.00

DUFF JACKS



Duff All-Iron Extensible Trench Brace Fittings

(Dunn Patent)



*Ordinary Gas Pipe is all
that is used for the Barrel*

WE furnish braces in this form to contractors who wish to put on pipe to suit themselves. All that is required to complete each brace is plain pipe, cut to length as explained below, with a small hole drilled in one end to receive cotter pin which holds brace together. This cotter pin may be removed and longer or shorter pipe substituted, to make the brace suit any width of trench. Cut the pipe 7 inches shorter than length of the complete brace wanted when closed, using 1½-inch pipe for 1½-inch screw, and 2-inch pipe for 2-inch screw. The screws used in all styles of braces shown in this catalog are of same standard, and are used either in connection with pipe as shown on preceding page, or with washer plates on timber braces as shown on next page.

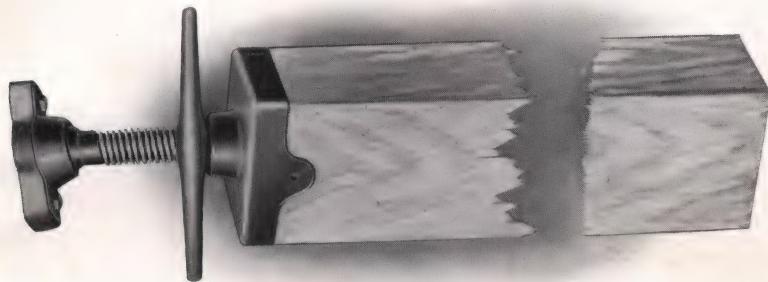
Diameter of Screw Inches	Length of Screw Inches	Safe Extension of Screw Inches	Weight per Dozen Pounds	Code Word Complete	List Price Complete per Dozen	List Price Screw Ends Only per Dozen	Code Word Screw Ends Only
1½	12	7	185	Bait	\$20.00	\$15.00	Sabre
1½	14	8	192	Bale	21.00	16.00	Slab
1½	16	9	204	Bar	22.00	17.00	Sled
1½	18	10	208	Baste	23.00	18.00	Sod
2	18	10	440	Beak	45.00	33.00	Spear

DUFF JACKS



Duff Screw Fittings for Timber Braces

(Dunn Patent)



*For bracing Mines, Subways, and
Excavations, as well as wide and deep Trenches*

THIS style of brace can be used in any width of trench from 2 to 30 feet. It will be found especially valuable in wide and deep trench work as well as for vertical bracing. When required, we can furnish caps also for butt-end of brace. Unless otherwise stated in order, all orders will be filled without butt-end caps. Timbers are not furnished. Round washer plates without flanges can be furnished instead of square ones, when so ordered. In ordering, give diameter and length of screw and size of cap wanted.

Diameter of Screw Inches	Length of Screw Inches	Size of Cap or Washer Plate Inches	Weight per Dozen Pounds	Telegraph Code	List Price per Dozen Sets	Butt End Caps per Dozen
1 1/2	14	4 x 4	175	Tack	\$18.00	\$ 3.00
1 1/2	14	6 x 6	192	Tag	20.00	4.00
1 1/2	18	6 x 6	214	Tank	22.00	4.00
2	18	6 x 6	384	Tar	38.00	5.00
2	18	8 x 8	410	Teak	40.00	7.00
2	18	10 x 10	450	Tenor	42.00	10.00
2	18	9 x 12	444	Tern	44.00	11.00

DUFF JACKS



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DUFF JACKS



*For
Repair Parts of
Duff Jacks*

See Separate
Repair Parts Catalog
No. 106-R





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